

# APPENDIX F

## CM STANDARDS

### COMPARISON MATRIX

#### QUESTIONS THIS APPENDIX WILL ANSWER?

Para.

1. Where are the generally equivalent requirements found in the various CM Standards? What are the differences in coverage and treatment of related subjects?

F-2

### F.1 Scope.

Using EIA Standard 649 as the baseline, similar paragraphs and topics in the following documents are compared. MIL-STD-973 is included to provide a reference point for legacy programs.:

- EIA-649
- MIL-STD-2549
- ISO-10303-203
- ISO 10007
- IEEE STD 828-1990
- MIL-STD-973 (REF)

### F.2 Comparison Matrix.

The comparison matrix is provided in **Table F-1**. A direct comparison of Standard 649 to Standard 2549 is not possible since 649 is a “what” (what are the components of a good CM Program) and 2549 is a tailorable “how” (how to capture status accounting information in a “one face to Government” format. Standard 2549 supports all of the necessary CSA elements and relationships to satisfy the “whats” addressed in Standard 649.

**Table F-1. Comparison Matrix - CM Standards**

| 649 Para. Title and Principle(s) |   | 2549     | 203 | 10007                             | 828     | 973                |
|----------------------------------|---|----------|-----|-----------------------------------|---------|--------------------|
| 5.1                              | <b>Configuration Management Planning and Management</b><br>Plan CM processes for the context and environment in which they are to be performed and manage in accordance with the planning; assign responsibilities; train personnel; measure performance; and assess measurements/trends to effect process improvements.                        |          |     | √<br>4.2.2<br>6.2<br>7.2.1<br>7.7 | √       | √<br>4.2           |
| 5.1.1                            | <b>Identifying Context and Environment</b> To determine the specific CM value adding functions and levels of emphasis for a particular product, identify the context and environment in which CM is to be implemented.  | √<br>6.3 |     | √<br>6.1<br>6.2<br>7.7            | √       | √<br>4.2           |
| 5.1.2                            | <b>Configuration Management Plan.</b> A configuration management plan describes how configuration management is accomplished and how consistency between the product definition, the product's configuration, and the configuration management records is achieved and maintained throughout the applicable phases of the product's life cycle. | √        |     | √<br>4.2.3<br>7.7<br>Annex A      | √<br>2. | √<br>4.2f<br>5.2.1 |
| 5.1.3                            | <b>Implementation Procedures.</b> Prepare procedures to define  |          |     | √                                 | √       | √                  |

**Table F-1. Comparison Matrix - CM Standards**

| 649 Para. Title and Principle(s) |   | 2549         | 203 | 10007                          | 828        | 973   |
|----------------------------------|---|--------------|-----|--------------------------------|------------|---|
|                                  | how each configuration management process will be accomplished.   |              |     | 4.2.3<br>7.2 7.4<br>7.5<br>7.6 |            | 4.2f<br>5.2.1   |
| 5.1.4                            | <b>Training.</b> Conduct training so that all responsible individuals understand their roles and responsibilities and the procedures for implementing configuration management processes.   |              |     | √<br>6.2                       |            |   |
| 5.1.5                            | <b>Performance Measurement.</b> Assess the effectiveness of CM plan implementation and performance of the configuration management discipline with defined metrics (performance indicators).  | √<br>4.5     |     | √<br>4.2.4<br>8                |            | √<br>5.5.7  |
| 5.1.6                            | <b>Supplier Configuration Management.</b> Performing configuration management includes responsibility for the configuration management performance of subordinate activities (e.g. subcontractors and vendors).   | √<br>DIP6    |     | √<br>6.2                       | √<br>2.3.6 | √<br>5.6.1.1  |
| 5.2                              | <b>Configuration Identification.</b> Configuration identification is the basis from which the configuration of products are defined and verified; products and documents are labeled; changes are managed; and accountability is maintained.  | √            |     | √<br>5.2                       | √<br>2.3.1 | √<br>4.4<br>5.3.1<br>5.3.5  |
| 5.2.1                            | <b>Product Information.</b> Configuration documentation defines the functional, performance, and physical attributes of a product. Other product information is derived from configuration documentation.   | √            | √   | √<br>7.2.2                     | √          | √<br>5.3.1<br>5.3.4.1<br>5.3.4.2                                  |
| 5.2.2                            | <b>Product Structure.</b> The product composition (i.e. relationship and quantity of parts that comprise the product) is determinable from its configuration documentation.   | √            | √   | √<br>5.2.1<br>7.2.1            | √          | √<br>5.3.1<br>5.3.2   |
| 5.2.3                            | <b>Product Identifiers.</b> All products are assigned unique identifiers so that one product can be distinguished from other products; one configuration of a product can be distinguished from another; the source of a product can be determined; and the correct product information can be retrieved. | √<br>DIP3    |     | √<br>5.2.3<br>7.2.3            | √          | √<br>5.3.6<br>5.3.6.1<br>5.3.6.2<br>5.3.6.4<br>5.3.6.5<br>5.3.6.7 |
| 5.2.3.1                          | <b>Identifying Individual Units of a Product</b> Individual units of a product are assigned a unique product unit identifier when there is a need to distinguish one unit of the product from another unit of the product.  | √<br>4.2.2.2 | √   | √<br>A.3                       |            | √<br>5.3.6.6  |
|                                  | <b>Identifying Individual Units of a Product</b> When a product is modified, it retains its original product unit identifier even though its part identifying number is altered to reflect a new configuration.   |              |     |                                |            |   |
| 5.2.3.2                          | <b>Identifying Groups of Units of a Product</b> A series of like units of a product is assigned a unique product group identifier when it is unnecessary or impracticable to identify individual units but nonetheless necessary to correlate units to a process, date, event, or test.                   | √            | √   |                                | √          | √<br>5.3.6.6  |
| 5.2.4                            | <b>Document Identification.</b> All documents reflecting product performance, functional, or physical requirements and other product information are uniquely identified so that they can be  | √<br>4.2.5   |     | √<br>5.2.3<br>7.2.3            | √          | √<br>5.3.6.3  |

Table F-1. Comparison Matrix - CM Standards

| 649 Para. Title and Principle(s)     |  | 2549                   | 203 | 10007                             | 828          | 973                                      |
|--------------------------------------|--|------------------------|-----|-----------------------------------|--------------|--|
|                                      | correctly associated with the applicable configuration of the product.   |                        |     |                                   |              |  |
| 5.2.5                                | <b>Baselines.</b> A baseline identifies an agreed-to description of the attributes of a product at a point in time and provides a known configuration to which changes are addressed.  | √<br>DIP6              |     | √<br>5.2.4<br>7.2.4               | √<br>2.3.1.1 | √<br>5.3.3<br>5.3.4                      |
| 5.2.5.1                              | <b>Establishing Baselines.</b> Baselines are established by agreeing to the stated definition of a product's attributes.   | √                      |     | √<br>5.2.4<br>7.2.4               | √            | √<br>5.3.3<br>5.3.4<br>5.3.5             |
| 5.2.5.2                              | <b>Types of Baselines.</b> The Configuration of any product, or any document, plus the approved changes to be incorporated is the current baseline.  | √                      |     | √<br>5.2.4<br>7.2.4               | √            | √<br>5.3.3<br>5.3.4                      |
| 5.2.5<br>5.2.5.1<br>5.2.5.2<br>5.3.3 | <b>Release system.</b> Maintain release control of documents for baseline management (inferred principle).   | √                      |     | √<br>5.3                          |              | √<br>5.3.5                               |
| 5.2.6                                | <b>Product Identification Recovery.</b> Recovery of product information may be necessary in cases where records of operational units of a product do not match the actual units (as reported by maintenance activities) or where such records do not exist.                  |                        |     |                                   |              |  |
| 5.2.7                                | <b>Interface Control.</b> For product interfaces external to the enterprise, establish an interface agreement and a mutually agreed to documentation of common attributes.   |                        |     | √<br>7.4.2                        |              | √<br>5.3.7.                              |
| 5.3                                  | <b>Configuration Change Management.</b> Changes to a product are accomplished using a systematic, measurable change process.   | √<br>4.4.2<br>DIP4     | √   | √<br>5.3                          | √<br>2.3.2   | √<br>4.5<br>5.4<br>5.4.1<br>5.4.2.1      |
| 5.3.1                                | <b>Change Identification.</b> Each change is uniquely identified.  | √<br>DIP4              | √   | √<br>5.2.3<br>7.2.3<br>7.4.1      | √            | √<br>5.4.2                               |
| 5.3.1.1                              | <b>Requesting Changes.</b> Changes represent opportunities for improvement.  | √<br>DIP4              | √   | √<br>7.4.1                        | √<br>2.3.2.1 | √<br>5.4.2                               |
| 5.3.1.2                              | <b>Classifying Changes.</b> Classify requested changes to aid in determining the appropriate levels of review and approval.  | √<br>DIP4              | √   | √<br>5.3<br>7.4.1                 | √            | √<br>5.4.2.2.1<br>5.4.2.4                |
| 5.3.1.3                              | <b>Documenting Requests for Changes.</b> Change requests must be clearly documented.   | √<br>4.4.2.1           | √   | √<br>5.3<br>7.4.1                 | √            | √<br>5.4.2.2.3<br>5.4.2.3.5<br>5.4.2.4.1 |
| 5.3.2                                | <b>Change Evaluation and Coordination.</b> Consider the technical, support, schedule, and cost impacts of a requested change before making a judgment as to whether the change should be approved for implementation and incorporation in the product and its documentation. | √<br>4.4.2.1.1<br>DIP4 | √   | √<br>5.3<br>6.2<br>7.4.2<br>7.4.3 | √<br>2.3.2.2 | √<br>5.4.2.1                             |

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| 649 Para. Title and Principle(s) |  | 2549           | 203 | 10007                      | 828          | 973  |
|----------------------------------|--|----------------|-----|----------------------------|--------------|--|
| 5.3.2.1                          | <b>Change Impact Assessment.</b> Determine all potential effects of a change and coordinate potential impacts with the impacted areas of responsibility.   | √<br>DIP4      | √   | √<br>5.3<br>7.3<br>7.4.2   | √            | √<br>5.4.2.1                                 |
| 5.3.2.2                          | <b>Change Effectivity Determination</b> Change documentation delineates which unit(s) of the product are to be changed. Change effectivity includes both production break-in and retrofit/recall, as applicable.                                 | √<br>DIP4      | √   |                            | √            | √<br>D.5.1.21<br>D.5.1.23                    |
|                                  | <b>Change Effectivity Determination</b> A changed product should not be distributed until support and service areas are able to support it.  |                |     |                            |              |  |
| 5.3.2.3                          | <b>Change Cost/Price Determination.</b> The decision maker is aware of all cost factors in making the decision.  | √<br>DIP4      |     |                            | √            | √<br>D.5.4.2<br>5.4..2..2.3.3                |
| 5.3.2.4                          | <b>Change Approval Authority.</b> Change approval decisions are made by an appropriate authority who can commit necessary resources to implement the change.   | √<br>4.4.2.1.2 | √   | √<br>5.3<br>7.3<br>7.4.3   | √<br>2.3.2.3 | √<br>5.4.2.3.1<br>5.4.2.4..3-<br>5.4.2.4.5   |
| 5.3.3                            | <b>Change Implementation and Verification.</b> Implement an approved change in accordance with documented direction approved by the appropriate level of authority.  | √              | √   | √<br>5.3<br>7.4.4          | √<br>2.3.2.4 | √<br>5.4.2.1                                 |
|                                  | <b>Change Implementation and Verification.</b> Verify implementation of a change to ensure consistency between the product, its documentation and its support elements.  |                |     |                            |              |  |
| 5.3.4                            | <b>Change Management Process applied to Variances.</b> If it is considered necessary to temporarily depart from specified baseline requirements, a variance is documented and authorized by the appropriate level of authority.                  | √              |     | √<br>5.3<br>7.3            |              | √<br>4.5<br>5.4.3-<br>5.4.4                  |
| 5.4                              | <b>Configuration Status Accounting</b> An accurate, timely information base concerning a product and its associated product information is required throughout the product life cycle.   | √<br>4.4.2.3   |     | √<br>5.4<br>7.5.1          | √<br>2.3.3   | √<br>4.6<br>5.5.1                            |
| 5.4.1                            | <b>CSA Information.</b> Configuration information, appropriate to the product, is systematically recorded, safeguarded, validated and disseminated.  | √              |     | √<br>5.4<br>7.5.2<br>7.5.3 | √            | √<br>4.6<br>5.5.2<br>5.5.4<br>5.5.5<br>5.5.8 |
|                                  | <b>CSA Information</b> Configuration information content evolves and is captured over the product life cycle as tasks occur.   | √<br>4.4.2.4   |     |                            | √            |  |
| 5.4.2                            | <b>CSA System.</b> Data collection and information processing system requirements are determined by the need for configuration information.  | √<br>6.3       |     | √<br>5.4<br>7.5.2<br>7.5.3 | √            | √<br>5.5.3                                   |
| 5.5                              | <b>Configuration Verification and Audit</b> Verification that a product's requirement attributes have been met and the product design meeting those attributes has been accurately documented is required to baseline the product configuration. |                |     | √<br>5.5                   | √<br>2.3.4   | √<br>4.7<br>5.6.1<br>5.6.2<br>5.6.3          |
| 5.5.1                            | <b>Design and Document Verification.</b> Verification that a design achieves its goals is accomplished by a systematic   |                |     | √<br>5.5                   |              | √<br>5.6.2                                   |

**Table F-1. Comparison Matrix - CM Standards**

| 649 Para. Title and Principle(s) |  | 2549                | 203 | 10007        | 828 | 973                          |
|----------------------------------|--|---------------------|-----|--------------|-----|------------------------------|
|                                  | comparison of requirements with the results of tests, analyses or inspections.   |                     |     | 7.4.4<br>7.6 |     | 5.6.3                        |
|                                  | <b>Design and Document Verification.</b> Documentation of a product's definition must be complete and accurate enough to permit reproduction of the product without further design effort                      |                     |     |              |     |                              |
| 5.5.2                            | <b>Configuration Audit.</b> Where necessary, verification is accomplished by configuration audit   | √<br>4.5<br>DIP5    |     | √<br>7.6     |     | √<br>5.6.1<br>5.6.2<br>5.6.3 |
| 5.5.3                            | <b>Continuing Performance Audits and Surveillance.</b> Periodic reviews verify continued achievement of requirements, identify and document changes in performance, and ensure consistency with documentation. | √<br>4.5.1<br>4.5.2 |     | √<br>7.6     |     | √<br>4.7                     |
| 5.6                              | <b>Configuration Management of Digital Data</b> Apply configuration management principles to ensure the integrity of digital representations of product information and other data                             | √<br>DIP9           |     | √<br>7.2.3   |     | √<br>4.3                     |
| 5.6.1                            | <b>Digital Data Identification.</b> Apply digital data identification rules to maintain document, document representation, and file version relationships.   | √                   |     | √<br>7.2.3   |     | √<br>4.3.2                   |
| 5.6.2                            | <b>Data Status Level Management.</b> Apply business rules using data status levels for access, change management, and archiving of digital data documents.   | √                   |     | √<br>5.3     |     | √<br>4.3.2                   |
| 5.6.3                            | <b>Maintenance of Data and Product Configuration Relationships.</b> Maintain relationships between digital data, data requirements, and the related product configuration to ensure accurate data access.      | √                   |     | √<br>7.2.3   |     | √<br>4.3.2                   |
| 5.6.4                            | <b>Data Version Control and Management of Review, Comment, Annotation, and Disposition.</b> Apply disciplined version control to manage document review electronically.  | √<br>4.6.1<br>4.6.2 |     | √<br>7.2.3   |     | √<br>4.3.2                   |
| 5.6.5                            | <b>Digital Data Transmittal.</b> Ensure that a transmitted digital data product is usable.   | √                   |     |              |     | √<br>4.3.1<br>4.3.2<br>4.3.3 |
| 5.6.6                            | <b>Data Access Control.</b> Effective digital data access fulfills requirements, preserves rights, and provides users with data they are entitled to in the correct version.                                   | √<br>4.6.3          |     |              |     | √<br>4.3.1<br>4.3.2<br>4.3.3 |